



Space Day: Prospecting for Knowledge

6-Moon Archeology-Chip Mines – Teacher Page

Materials:

- Chocolate Chip Cookie
- Toothpick (round ones are stronger, but flat ones scoop better)
- Straw (cut into pieces 1 inch long)
- Paper towel

Think: What's the best way to mine (remove) the chocolate from a cookie?

The rules:

- Your mine will earn \$1,000 for every 1-inch straw you fill with chocolate pieces.
- You will be charged \$100 for every minute it takes to process your chocolate (get out all the crumbs).
- The value of your Chip Mine (your cookie) goes down \$100 just for mining it. The more damage, the more you lose. The fine: \$100 for each cookie piece that breaks off.

Activity:

1. Place your Chip Mine on a paper towel and examine it. How many chips can you see on the surface? Make a drawing of your Chip Mine.
2. Use a toothpick to carefully dig out chocolate chips. You may “look underground” by peeking at the bottom of your cookie. But you *must* mine it from the top.
3. Done? Draw your Chip Mine again.
4. Compute your Land Damage: Count the cookie pieces. (If your cookie is whole, that's 1 piece.) Record the total under Land Damage on your chart.
5. Process your chocolate: Separate the crumbs from the chocolate. Have a friend time your work. Round off the time to the nearest minute. Record it under Processing Time.
6. Measure your chocolate: Pick up the pieces with a 1-inch straw. Repeat with as many straws as you need. Record the number of straws under Chocolate Mined.
7. Follow the steps in “How to Figure Your Earnings” to find out how successful your Chip Mine is.

Wrap-up: Whose mine made the most money? Why? (Lots of chocolate in the mine? Careful digging? What else?) Did anyone go bankrupt (broke)? How would your mining plan change if there were no fines for breaking apart your Chip Mine? What if you used a different brand of cookie – a softer one, for instance?



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Bonus: Suppose your Chip Mine is an oatmeal raisin and chocolate chip cookie. Would you dig for chocolate, oatmeal, or raisins? Why?



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How to Figure Your Earnings:

How much “dough” did your Chip Mine make? Follow these steps:

1. Fill in your scores and multiply to get the total dollar values.

Land Damage (Step 4): _____ pieces x \$100 = \$_____

Processing Time (Step 5): _____ minutes x \$100 = \$_____

Chocolate Mined (Step 6): _____ straws x \$1,000 = \$_____

2. Add the dollar values for Processing Time and Land Damage. Write the answer here:

Total Costs: \$_____

3. Are the Total Costs (Step 2) more than the dollar value of your Chocolate Mined (Step 1)?

If Yes: Your mine has lost money. Write Bankrupt in the blank.

If No: Subtract the Total Costs from the Chocolate Mined. Write the answer here:

Total Earnings: \$_____